BRITISH COLUMBIA

Sea Lice Management 2005

Mandatory sea lice monitoring will continue on salmon farms in 2005. The on-farm sampling program is based on internationally accepted protocols for sea lice monitoring. The industry will be required to report monitoring of lice on Atlantic salmon farms within specific fish health zones/areas.

All farms must have a fish health management plan in place as a condition of licence. Sea lice monitoring is included in this plan and all producers must adhere to Ministry of Agriculture, Food and Fisheries (MAFF) requirements.

Monitoring information will be evaluated along with environmental information to support integrated area management of farmed fish lice populations during wild stock migration.

The working group of fish health experts and veterinarians responsible for the management of aquaculture stocks will continue to work together to evaluate the information collected and effectiveness of the control measures taken. Members of this group are also working with representatives of Fisheries and Oceans Canada to integrate wild fish information as it becomes available. Fisheries and Oceans Canada has committed to continuing their research into sea lice on wild fish stocks in BC

Monitoring and Reporting

Results for Atlantic salmon sites will continue to be posted on a monthly basis on the MAFF website. In addition to monitoring by the farms, MAFF conducts a surveillance and monitoring program as an audit of farm reports. This auditing program of on-farm sampling of sea lice will continue with an increase in random auditing visits to 50% (up from 25%) of the active sites during the wild smolt out-migration. This audit will ensure the validity of the industry data.

All Atlantic salmon farms are required to monitor sea lice levels on their fish a minimum of once a month and report these findings to MAFF. When mobile lice levels reach three at any time of year then an action must be taken: monitoring is increased to twice a month and harvest, treatment or other management tools are used to decrease the lice levels. During the spring out-migration of juvenile salmon, action must include treatment or harvest.

Comparison of Action Levels with Other Jurisdictions

There is frequent comparison of management levels of lice with other countries' management levels. It should be noted that BC has more stringent action levels than other countries. Management is required as a condition of licence and must follow the company's fish health management plan.

BC action level (as condition of license):
3 mobile lice (all stages) throughout the year.

> **Action =** Increased monitoring, harvest, treatment or husbandry changes; during the smolt out migration either harvest or treatment must occur in addition to increased monitoring.

Norwegian action level:
01 December – 01 July: 5 mobile lice (all stages), 0.5 egg-producing adult female lice
01 July – 01 December: 10 mobile lice (all stages), 2 egg-producing adult female lice

Irish action recommendation:
01 Mar – 01 May: 0.3 - 0.5 egg-producing adult female lice per fish
01 May – 01 Mar: – 2 egg-producing adult female lice per fish

Scottish: – no official action level, area management agreements

Active Surveillance of Farm Sites by MAFF

In addition to the regular on-farm monitoring conducted by the companies, MAFF undertakes active surveillance of the farm sites for sea lice levels. During each of the 1st, 3rd and 4th quarters of 2005, 25% of the active sea sites will be monitored. During the 2nd quarter (which coincides with the juvenile out-migration) 50% of the active sites will be monitored. This sampling is in addition to the routine farm sampling. Surveillance samples by MAFF are not substituted for the farm's responsibilities.

Company Information Sharing

It is usual for discussions of sea lice management to occur between companies based in an area. Where multiple companies are found in a defined area, management actions, particularly treatments are routinely coordinated. Much of the focus has been on the Broughton Area over the last few years, the companies that have farm sites in that area are working together closely to ensure that management actions are coordinated.

Research Activities

A great number of sea lice research studies are either underway or have been completed. For example, the British Columbia Aquaculture Research and Development Committee has supported the following studies:

1. Assessing the impact of sea lice on the recruitment of pink salmon in the Broughton Archipelago and surrounding area;
2. Origin of sea lice on juvenile pink salmon in the Broughton Archipelago;
3. Interaction between sea louse *Lepeophtheirus salmonis* and wild and farmed salmonids:
    a. Laboratory and field investigations into louse origin;
    b. Susceptibility and lethal loading;
    c. Using sentinel cages and biomolecular markers.
4. Assessing the impact of sea lice on the recruitment of pink salmon in the Broughton Archipelago and surrounding area (winter sampling);
5. 2004 North Coast Marine Baseline Survey and Sea Lice Research Program;
6. Use of light trap and DNA methodology to monitor intensity and origin of sea lice on wild and farmed salmon;
7. Estimation of the impact of sea lice infestation from fish farms on native stocks using a risk factor model;
8. Marine Monitoring of Sea Lice on Wild Juvenile Salmonids in Clayoquot Sound (2004-2005); and
9. Identifying the natural hosts of sea lice on the Broughton Archipelago area in the late fall.

The results of these studies as well as other research efforts by Department of Fisheries and Oceans and University-associated scientists will provide a better understanding of interaction between sea lice and farmed and wild salmon populations in British Columbia. While it is important to take into consideration the experiences of other countries regarding sea lice, it is equally important to understand sea lice dynamics in the context of local conditions in British Columbia. In BC we have far larger wild salmon populations than any other countries; in addition there are significantly different clinical effects of sea lice on farmed fish in BC than in other countries.

Summary

Mandatory monitoring and management of sea lice on fish farms will continue in 2005. The level for action to occur has been lowered to 3 mobile lice stages per fish throughout the year. Sampling protocols will increase the total amount of monitoring done. MAFF will audit farms in 2005 with a target period for increased monitoring during the smolt out- migration.